

CLAIMS:

1. A tilt control device for controlling a radial tilt of a recording surface of an optical disc (1) with respect to an optical recording/reproducing beam, said tilt control device comprising:

a) control means (10) for generating two focus controlling outputs; and

5 b) actuating means (11) for controlling a focusing state of the optical recording/reproducing beam based on said two focus controlling outputs and the radial tilt, characterized in that

c) said control means (10) is arranged to determine the radial tilt value based on a differentiation of focus control values obtained at different radii of said optical disc (1).

10 2. A device according to claim 1, characterized in that said actuating means (11) comprises a split focus coil arrangement arranged to provide focus and tilt adjustment; and said control means (10) is arranged to supply said two focus controlling outputs to respective coils (C1, C2) of said split focus coil arrangement.

15 3. A device according to claim 1 or 2, characterized in that said focus controlling output is a PID controller output.

4. A device according to any one of claims 1 to 3, characterized in that said control means (10) is arranged to position a sledge (4) at at least two different radial positions (R1 to R3), to control said actuating means (11) to adjust the focus, and to measure said focus
20 controlling output at said at least two different radial positions.

5. A device according to any one of the preceding claims, characterized in that said control means (10) is arranged to set a mean disc tilt value in a tilt register ($R\beta$).

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6. A device according to any one of the preceding claims, characterized in that said control means (10) is arranged to generate said tilt control output based on measured mean focus controller outputs and corresponding radial steps between two measurements.

7. A device according to claim 5, characterized in that said tilt register value is obtained based on the following equation:

$$r_{\beta} = \frac{G_c c_f \Delta r_f}{c_f (a_1 + a_2) \Delta R}$$

where Δr_f is the difference between two mean focus integrator values measured at

5 initialization, ΔR is a sledge step in radial direction between two measurements, G_c is the factor between actuator tilt and disc tilt for which comatic aberrations are optimal corrected, c_f is a spring constant acting against a focusing movement, c_t is a spring constant acting against a tilt movement, a_1 is a distance of a first coil of said split coil arrangement with respect to a symmetry line, and a_2 is a distance of a second coil of said split coil arrangement
10 with respect to said symmetry line.

8. A device according to any one of the preceding claims, further comprising a tilt table for storing an information indicating mean disc tilt values and corresponding radial positions.

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9. An optical disc player comprising a tilt control device as claimed in any one of claims 1 to 8.

10. A tilt control method for controlling a radial tilt of a recording surface of an optical disc (1) with respect to an optical recording/reproducing beam, said tilt control
20 method comprising the steps of:

a) generating a focus and a tilt controlling output, and

b) controlling a focusing state of the optical recording/reproducing beam and the radial tilt based on said focus and tilt controlling output, characterized by

25 c) determining the radial tilt value based on a differentiation of focus control values obtained at different radii of said optical disk (1).

11. A method according to claim 10, characterized by controlling said focusing state by using a split coil arrangement arranged to provide a focus adjustment; and

30 supplying said focus and tilt controlling output to respective coils of said split coil arrangement.

12. A method according to claim 10 or 11, characterized in that said focus controlling step comprises using a mean focus controlling output for tilt control.

13. A method according to any one of claims 10 to 12, characterized in that
5 said focus controlling step comprises measuring said focus controlling output at at least two different radial positions, and generating said tilt controlling output based on the mean radial tilt obtained for said two predetermined tilt angles in between said at least two different radial positions.